PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Satoshi AOYAMA et al. Attn: PCT Branch

Application No. New U.S. National Stage of PCT/JP2004/016191

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For: FUEL CELL SYSTEM AND MOBILE OBJECT

TRANSLATION OF THE ANNEXES TO THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached hereto is a translation of the annexes to the International Preliminary Report on Patentability (Form PCT/IPEA/409). The attached translated material replaces the claims in their entirety.

Respectfully submitted,

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CLAIMS

1. (Amended) A power supply system for outputting power, comprising:

a fuel cell furnished with a proton-conductive electrolyte layer and a hydrogen-permeable metal layer joined to the electrolyte layer;

a fuel gas feeder for feeding a hydrogen-containing fuel gas to the anode side of the fuel cell;

a purge gas feeder for feeding a purge gas devoid of hydrogen to the anode side of the fuel cell;

a purge decision unit that, once power generation in the fuel cell stops, decides whether a purge condition under which the purge gas should be supplied to the anode side of the fuel cell is met; and

a purge controller that, in the event that the purge decision unit decides that the purge condition is met, actuates the purge gas feeder to replace the fuel gas within the fuel cell with the purge gas, or in the event that the purge decision unit decides that the purge condition is not met, does not actuate the purge gas feeder.

2. (Cancelled)

3. (Amended) A power supply system according to Claim 1 wherein the decision by the purge decision unit as to whether the purge condition is met is executed on the basis of prescribed information representing the operational status of

the power supply system and/or prescribed information reflecting change in the power required by the power supply system.

4. (Amended) A power supply system according to Claim 1 wherein the purge controller actuates the purge gas feeder once a prescribed time period has elapsed after power generation by the fuel cell has stop.

5. (Amended) A power supply system according to any of Claims 1, 3 and 4 further comprising a fuel gas pressurizing unit that, once power generation by the fuel cell has stop but the purge gas supply portion is not actuated, raises the pressure of the fuel gas in the fuel gas flow passage formed in the fuel cell.

6. A power supply system according to Claim 5 wherein the fuel gas pressurizing unit raises the pressure of the fuel gas by actuating the fuel gas feeder to supply the fuel gas, while blocking the outlet of the fuel gas flow passage.

7. A power supply system according to Claim 3 further comprising a temperature sensing unit for sensing temperature at a prescribed location that is part of the power supply system and that operates at a temperature which rises to a prescribed high temperature during power generation by the fuel cell,

wherein the purge decision unit decides that the purge condition is met as long as the temperature sensed by the temperature sensing unit does not go above a prescribed value.

8. (Amended) A power supply system according to any of Claims 1, 3 and 7 wherein when power generation by the fuel cell commences after the purge gas feeder has been actuated, the fuel gas feeder supplies the fuel cell with fuel gas at a level in excess of the level corresponding to the power to be generated by the fuel cell.

9. A fuel cell supply system according to Claim 8 wherein the fuel gas feeder, when the power to be generated by the fuel cell is equal to or less than a prescribed value, supplies the fuel gas at a level in excess of the level corresponding to the power to be generated; or when the power to be generated is greater than the prescribed value, supplies the fuel gas at a level corresponding to the power to be generated.

10. (Amended) A fuel cell system according to any of Claims 1, 3 and 9 further comprising a secondary cell.

11. A power supply system according to Claim 10 further comprising a state of charge sensing unit for sensing the state of charge of the secondary cell,

wherein in the event that the state of charge is equal to or less than a prescribed value, charging of the secondary cell is carried out using the fuel cell, with priority over the operation of shutting off power generation by the fuel cell.

12. A power supply system according to Claim 3 further comprising

a secondary cell; and

an output request acquiring unit for acquiring an output request to the power supply system;

wherein when the output request acquired by the output request acquiring unit is equal to or less than a prescribed value, the purge decision unit decides that the purge condition is not met, and outputs power from the secondary cell.

13. (Amended) A mobile object comprising:

the power supply system according to any of Claims 1, 3 and 12 installed on board as a drive energy supply.

14. (Amended) A mobile object comprising:

the power supply system according to Claim 1 installed on board as a drive energy supply; and

a predetermined start switch enabling driving of the mobile object;

wherein the purge controller actuates the purge gas feeder once a prescribed time period has elapsed after the start switch has turned off and power generation by the fuel cell has stop.

15. A mobile object comprising:

the power supply system according to Claim 3 installed on board as a drive energy supply; and

a predetermined start switch enabling driving of the mobile object;

wherein when the start switch has turned off, the purge decision unit decides that the purge condition is met.

16. (Amended) A mobile object comprising:

the power supply system according to any of Claims 1, 3 and 9 installed on board as a drive energy supply; and

an actuation status acquiring unit that acquires the actuation status from an actuating unit for driving the mobile object;

wherein after the purge gas feeder has been actuated during stop of the fuel cell, when the actuation status acquiring unit has acquired the actuation status after the purge gas feeder has been actuated during stop of the fuel cell, the purge controller halts the purge gas feeder.

17. A mobile object according to Claim 16 wherein

the power supply system further comprises a temperature sensing unit for sensing the temperature of the fuel cell, and a secondary cell serving as another drive energy supply for the mobile object;

wherein when the fuel cell temperature sensed by the temperature sensing unit is equal to or less than a prescribed value, the purge controller continues to actuate the purge gas feeder, even in the event that the actuation status acquiring unit has acquired the actuation status after the purge gas feeder has been actuated during stop of the fuel cell.

18. A method of stop a fuel cell system, comprising the steps of:

(a) during power generation by a fuel cell comprising a proton-conductive electrolyte layer and a hydrogen-permeable metal layer joined to the electrolyte layer, by supplying a hydrogen-containing fuel gas to the anode side of the fuel cell, acquiring a stop condition of the fuel cell;

(b) after acquiring the stop condition in step (a), selecting, as operating mode of the fuel cell system, an operating mode that is either a standby mode wherein power generation is halted while holding the fuel gas in the fuel gas flow passage within the fuel cell, or a stop mode wherein power generation is halted without holding the fuel gas in the fuel gas flow passage within the fuel cell; and

(c) in the event that the stop mode has been selected, supplying a purge gas devoid of hydrogen to the fuel gas flow passage within the fuel cell.

19. (Cancelled)

20. A mobile object comprising installed on board as a drive energy supply therefor a power supply system comprising a fuel cell having a proton-conductive electrolyte layer and a hydrogen-permeable metal layer joined to the electrolyte layer, a fuel gas feeder for feeding a hydrogen-containing fuel gas to the anode side of the fuel cell, a purge gas feeder for feeding a purge gas devoid of hydrogen to the anode side of the fuel cell, and a purge controller that, once power generation in the fuel cell stops, actuates the purge gas feeder to replace the fuel gas within the fuel cell with the purge gas; the mobile object further comprising an actuation status acquiring unit for acquiring the actuation status of an actuating unit for driving the mobile object,

wherein the purge controller, after actuating the purge gas feeder during stop of the fuel cell, halts the purge gas feeder when the actuation status acquiring unit has acquired the actuation status.